

Press Release

Press clothing from Heimbach: Innovation boost for increased efficiency

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GROUP

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Introduction

The effect of the globalised economy on the paper industry has been a steep increase in the demands on productivity and costs. The pressure is on to achieve a permanent increase in efficiency, which in turn has increased the tempo of technological development on paper machines.

At this point it is clear even today to what extent the clothing contributes to the functioning and performance of the paper machine. And this influence will continue to grow – along with the view that modern clothing is not just fulfilling a function, but that it is a promoter of efficiency from the headbox to the reel. In future the question of the price of clothing will take second place to its efficiency potential.

For this reason the current demand profile for clothing must be summarised as “functionally efficient”. Heimbach has long understood the

batt is applied. The upper and lower yarn substrates are then combined by the needling process with both the substrate batts and also the paper side and roll side surface batts. The individual yarns of the substrates are composed of twisted single monofilaments. Their number, the materials used, the twist techniques and the thickness and fineness of the batt are determined by the relevant position on the paper machine.

The prerequisite for the basic advantages of this technology is the fact that the construction has no Z-direction yarn systems and therefore no weave knuckles (III.1).

The typical speciality of the non-woven base from Heimbach is the layer of paper side yarns in the cross-machine direction.

These operate as “micro foils” which “shovel” the water fast and intensively out of the sheet and into the interior of the felt (III.2). This leads to an optimal



III.1 ATROCROSS from Heimbach

demand profile of its customers as a “creative imperative” – and with successful clothing innovations for the whole paper machine has translated these demands into practice. A number of these clothing innovations are briefly outlined here.

The Non-woven Press Felt Line

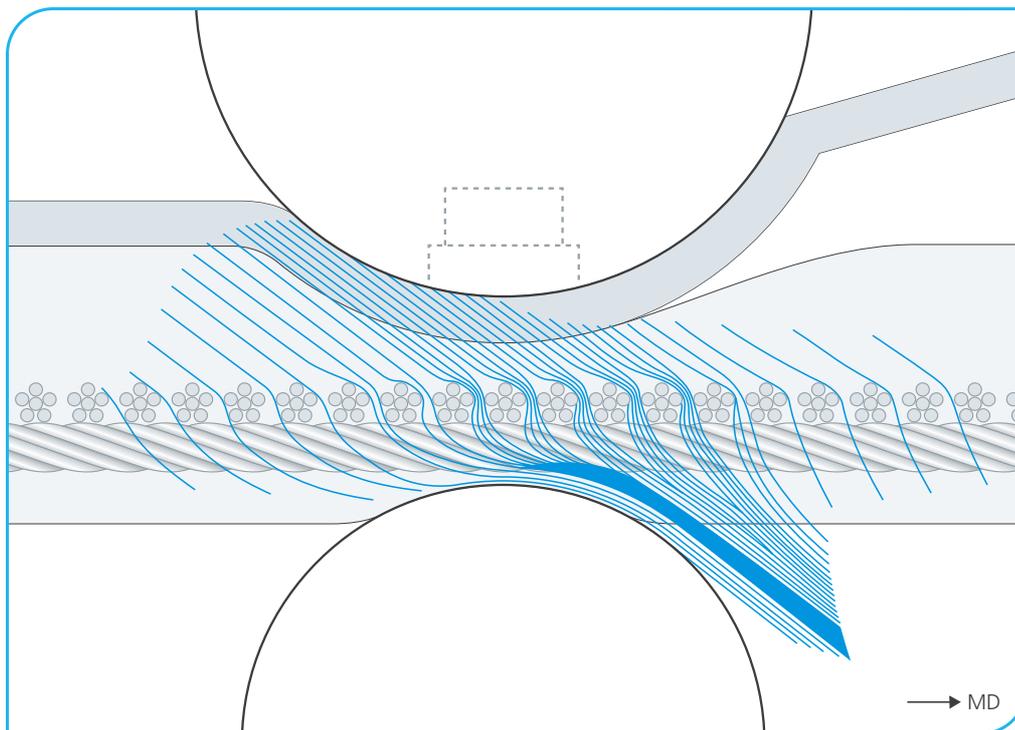
The unique non-woven basis of ATROCROSS consists of yarn substrates to each of which a substrate

nip saturation even at low specific pressures and rapidly initiates maximum nip dewatering and at the same time minimises rewetting (III.2).

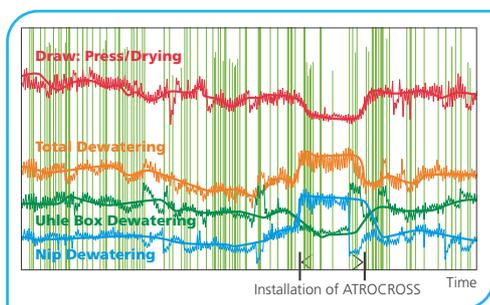
For all these reasons ATROCROSS has proved itself as an extremely fast starter and an outstanding “Nip Dewaterer”.

The long term trend on a paper machine showed over several installations of previous felts relatively even curves for draw tension, total dewatering,

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III.2 ATROCROSS: Nip dewatering, reduced rewetting

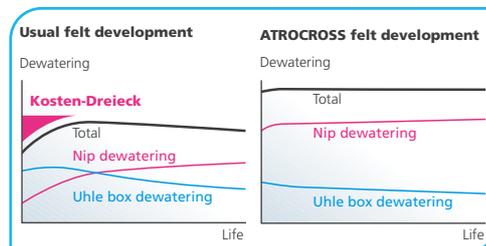


III.3 Comparison: Draw tension and dewatering

Uhle box and nip dewatering. By installing a non-woven felt from Heimbach which dewatered primarily in the nip a higher total dewatering was achieved and at the same time the draw tension and the break rate were reduced (III.3). This dewatering behavior follows the increasing machine speeds continuously up to 1900 m/min and more.

Particularly for fast machines the start up of a felt is of great importance. A high start up speed always means a considerable production increase (III.4 "Money Triangle"). If a 10 m wide newsprint machine (45 g/m²) as a result of optimal start-up dewatering can run 100 m/min faster, the gain in

production amounts to about 65 tonnes per day. All these advantages have been demonstrated in PM62 at Holmen Madrid. Currently PM62 is running further on with non-woven felts from Heimbach. The enormous nip dewatering potential and the efficiency of ATROCROSS have also been demonstrated on most of the shoe presses around the world, and on the single shoe presses installed in Slovakia, Argentina and South Africa.



III.4 Comparison: "Cost Triangle"

The new generation of multi-axial felts

The multi-axial product range from Heimbach has grown into a most successful product line. By developing and improving multi-axial technology the ATROMAXX products have successfully established themselves in the market.

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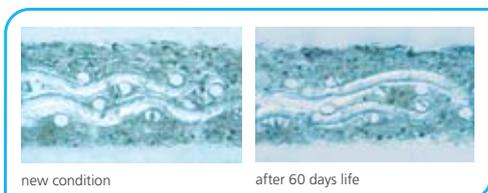
Two new additions to the range are now presented here. The new Heimbach felts are produced from multi-axial base modules made exclusively from mono-filaments. The combination possibilities and the flexibility of multi-axial technology were adapted now to "simply monofilament".

Primarily developed for the packaging paper industry ATROMAXX.M is the robust and versatile clothing for all packaging paper machines (III.5).

With appropriate adjustment of the batt surfaces these Heimbach felts can be suited to every position – from pick-up to 3. press – and naturally also for shoe-presses. For top quality paper surfaces they can be supplied with MD batt.



III.5 ATROMAXX.M



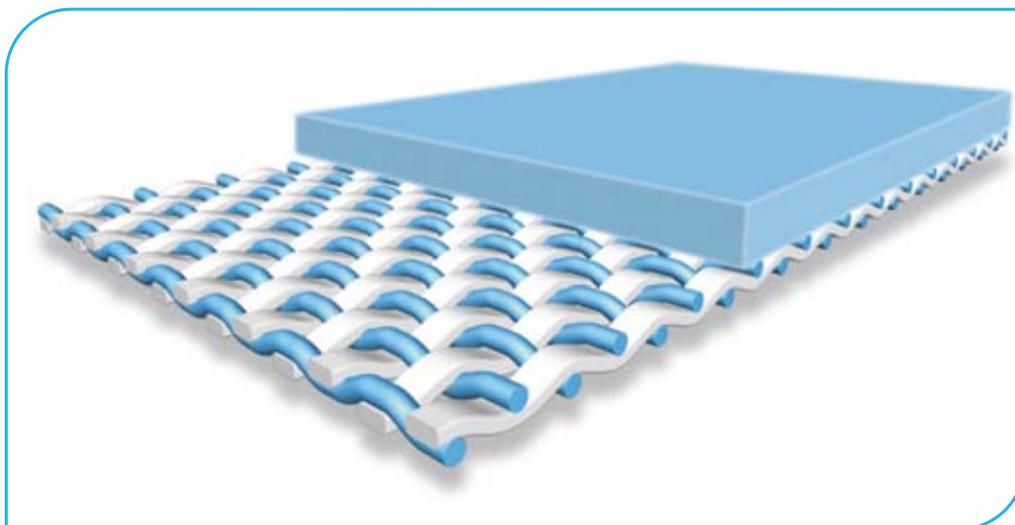
III.6 ATROMAXX.M

These multi-axial press felts are proven for maximum dewatering efficiency and life particularly for brown paper grades (III.6). However, the first positive results are now being seen on news and fine paper grades. A further advantage is that the base can be supplied with a seam, thus combining the advantages of multi-axial technology with those of conventional seamed felts.

ATROMAXX.XF is a combination of woven and diagonal modules combining high dimensional stability with a very fine upper surface layer. Its unique feature is the use of flat monofilaments in the machine direction (III.7).

The contact surface is increased and a better pressure distribution achieved. The structure of the base ensures a high level of openness for rapid dewatering with simultaneously high surface integrity designed to meet the increased demands on maximum freedom from marking over the whole felt life.

The applications range from pick-up positions of fine paper machines to shoe presses on speciality grades and boards. This multi-axial felt can be adapted in combination with MD batt or with flat fibres to every required application and is also suited to fulfilling the increasing demands on printability in the production of packaging grades.



III.7 ATROMAXX.XF: Paper side base weave

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The seamed felt programme

The optimisation of the paper making processes can also include consideration of whether improvements in clothing the press section can be achieved with seamed felts. In addition to the well known safety benefits on felt installation, a significant economic advantage can be obtained by time and personnel savings. Improvements can also be found in the fact that the specific performance characteristics of seamed felts allow for the more appropriate matching of the clothing to particular press sections or individual positions.

The decision to change over from endless to seamed felts is made much easier with Heimbach clothing. Runnability, extensibility/felt tension and particularly the execution of the seam and the seam area are suitable for all speeds. However, a few basic differences should be pointed out:

Behaviour of Structure: The woven base modules of CONNECT seamed felts from Heimbach are composed of monofilaments in both machine direction and cross direction (Ill.8). This construction is both necessary and wanted, since the fine loops of the seam are formed from the monofilament MD yarns. Specifically selected CD monofilaments

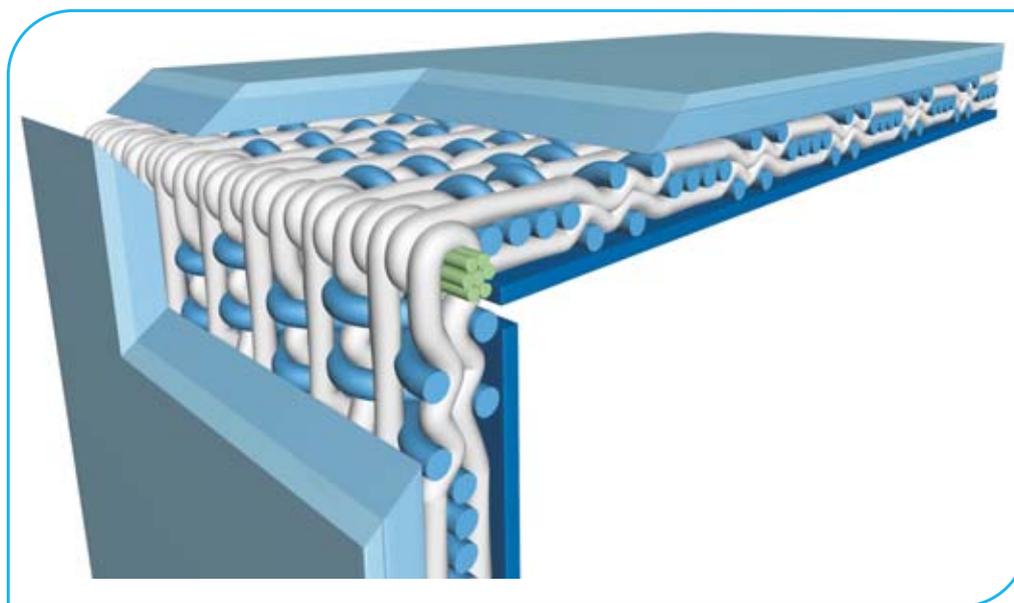
produce in the felt a high level of CD stability.

In combination the MD and CD monofilaments produce a more rigid, dimensionally and diagonally stable structure than is normally possible with an endless felt based on a plied yarn structure.

The seamed felt is installed at full width into the machine – like a dryer fabric. Therefore, the felt can be significantly “stiffer” – and as a result can have a higher incompressibility index. This gives it long life dewatering efficiency.

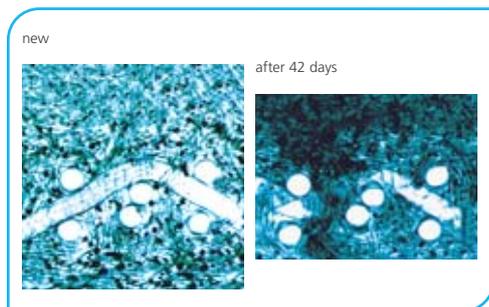
Behaviour of Base Geometry: A further positive feature of the pure monofilament base is that its initial geometry is maintained for significantly longer under press load, since monofilaments are not as easily deformed. The base types of Heimbach seamed felts retained constant operating efficiency over a long period. Illustration 9 shows on the right a CONNECT seamed felt after running for 42 days at 1300 m/min. The batt surface is visibly compacted and contaminated. The geometry of the base is however virtually unchanged. This is an obvious plus in the decision criteria in favour of seamed felts.

Seamed Felt Variations for Differing Dewatering Requirements: Nip dewatering or Uhle Box dewatering?



Ill.8 CONNECT seamed felt from Heimbach

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Ill.9 Comparison:
Pore volume CONNECT seamed felt

The Heimbach seamed felt programme offers suitable felt types for both types of dewatering.

ATROMAXX.CONNECT is exemplary in this context. This felt has an exceptionally high working void volume.

It is designed with a special batt surface for nip dewatering where very high water volumes have to be handled. In an appropriately modified form it can also be made to carry the water to the Uhle Box.

The Seam: The seam loops are formed from the MD monofilaments of the base and therefore have a high level of tensile strength. Nevertheless the seam presents a differing geometrical structure to the rest of the base. The development engineers at Heimbach have succeeded in designing the “behaviour” of the seam zone in such a way that it is virtually identical to the rest of the structure. Obviously the outstanding regularity of the seam loops and the density and evenness of the batt overlap contribute to this. The danger of seam marking is therefore avoided.

Value added by using Heimbach seamed

felts: Added value can be documented by the following example from practice:

Case Study Newsprint:

Reduction in Break Frequency

Position	Pick-up
Felt Width	5.8 m
Speed	Ø 1100 m/min

On installing CONNECT seamed felts from Heimbach optimal trouble-free pick-up combined with increased press dewatering and good permeability retention were recorded. Additionally no edge trim problems or edge lifting. As a result of the improved runnability in this position the break frequency was reduced by on average one break per day.

Calculation of Added Value:

Sheet Width Reel	5.31 m
Basis Weight	45 g/m ²
Speed at Reel	1070 m/min
Production Rate	~256 kg/min

Production Loss per Break (Ø 10 min)	2560 kg
Increased Production at Ø one break less per day per year	2560 kg/day 895 t/year

Value at a price of 450 € per t	402,750 €
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Added Value for the Customer:

- Increased Production worth 402,750 € per year

Conclusion

Innovations are the super-fuel of the economy. They best fulfil this need when daily practice has been the background to their development. As technological pacemaker for many such developments, Heimbach has aligned itself to this thinking.

As with all development stages in the improvement of Heimbach clothing, exchanges of experience and cooperation with customers and machine builders have been decisive in the success of the products. For this, Heimbach would like to express their special thanks.